

Auroras.—1st, Geneseo, Ill.; Pembina, 2nd, Geneseo, Ill.; Independence and Cresco, Iowa; Duluth, 3rd, Nora Springs, Iowa; Escanaba; Pembina, 4th, Escanaba, 8th, Duluth, 9th, Manitowoc, Wis.; Rochester, 10th, Waltham, Mass.; Duluth; Rochester, 11th, Duluth; Eastport; Pembina, 12th, Cornish and Gardiner, Me. 13th and 15th, Gardiner, Me. 16th, Monticello and Davenport, Iowa; Contookville, N. H. 17th, Waltham and Cambridge, Mass.; Davenport; Pembina, 20th, Waltham, Mass.; Pembina, 24th, Fort Brady, Mich. 28th, Boonsboro, Iowa.

OPTICAL PHENOMENA.

Solar Halos.—1st, Ind., Iowa, Kan., Mich., Neb., N. H., N. Y., Wis. 2nd, Ga., Ill., Mass., N. H., N. Y., R. I., S. C. 5th, Conn., Me., Mass., N. H., N. J., N. Y. 6th, Ala., La., Miss., S. C. 7th, D. C., Ill., Iowa, N. C., Tenn., Va., W. Va. 8th, Ala., Ill., Minn., N. Y., N. C., S. C., Tenn. 9th, N. Y., N. C., Tenn. 10th, Col., Kan., Minn., S. C., Tenn. 11th, Dak., Ill., Ind., Mich., Minn., N. Y., Ohio. 12th, Conn., Dak., Ga., Ill., Neb., R. I., S. C. 13th, Ill., Iowa, Wis. 14th, Ill., Md., Ohio, Penn. 15th, Ind., Iowa, Me., Neb., N. H., N. Mex., R. I. 16th, Me., Mo., Ohio. 17th, Ohio. 18th, La., Penn. 19th, Me., N. H., Ohio, S. C., Tenn. 20th, D. C., Iowa, Mich., N. Y., Tenn., Tex. 21st, Tenn. 22nd, Ga., Mass., Mich., N. H., N. Mex., N. Y., Ohio, Penn., Vt., Wis. 23rd, Ga., Me., N. H., N. Mex., N. Y., R. I., Vt. 24th, Mich., N. Mex. 25th, Kan., Mich., Wis. 26th, Iowa, S. C. 27th, Dak., Minn., Ohio, Tenn. 28th, Col., Conn., Me., N. Y., Tenn., Va.

Lunar Halos.—1st, Ga., Kan., N. Y., N. C., Ohio, Utah. 2nd, Dak., Kan., Mass., N. J., N. Y., N. C., Penn. 3rd, Iowa. 4th, Mich. 5th, N. H., N. Y. 16th, Mo., Neb. 17th, La., Tenn., Tex. 18th, Ala., Conn., Fla., N. Y., Tenn., Tex. 19th, N. Y., Fla., Dakota. 20th, Dak., Kan., Me., Md., Mass., N. J., N. Mex., N. Y., N. C., Ohio, Penn., Tenn., Tex., Va., W. Va. 21st, Ala., Cal., Fla., Ill., Ind., Iowa, Ky., Mich., Minn., Miss., Mo., N. H., N. J., N. C., Ohio, Penn., Tenn., Vt. 22nd, Cal., Conn., D. C., Fla., Md., Mich., Minn., N. H., N. J., N. Mex., N. Y., N. C., Ohio, Penn., Tex., Utah, Vt., Va., W. Va., Wis. 23rd, Ala., Cal., La., Mass., N. H., N. J., N. Y., N. C., Tex., Wyoming. 24th, Col., Fla., Ga., Ind., Kan., La., Mich., Miss., Mo., Neb., N. J., N. Y., N. C., Tex., Utah, Wis., Wyo. 25th, Ala., Fla., Ill., Ind., Kan., La., Mich., Minn., Mo., N. J., N. Y., N. C., Ohio, Tenn., Tex., Wis. 26th, Ala., Fla., Ill., Iowa, Kan., Minn., Mo., N. J., N. Mex., N. C., Ohio, Tenn., Tex., Vt. 27th, Ind., Miss., Mo., N. Y., N. C., Ohio, Tenn., Vt. 28th, Ill., Ind., Iowa, Ky., Mo., N. C., Ohio, Tenn., Wis.

Mirage.—Neb.: Geneva, 1st. Kan.: Ellinwood, 1st, 2nd, 3rd, 4th, 5th, 6th; Dodge City, 17th. Minn.: Breckenridge, 2nd, 9th, 12th, 24th, 25th, 26th, 27th; Moorhead, 2nd, 5th, 6th, 7th, 8th, 12th, 27th, 28th; Duluth, 17th. Ga.: Tybee Island, 18th, 25th. Mass.: New Bedford, 20th.

MISCELLANEOUS PHENOMENA.

Zoological—(1) *Birds*.—*Wild Geese* were observed at Hennepin, Ill., flying S., 1st; Decatur, Ill., N., 8th; Belvidere, Ill., E., 8th; Oregon, Mo., 1st; Emerson, Neb., SE., 1st and 3rd; Plattsmouth, Neb., SW., 2nd; Clear Creek, Neb., N., 5th, 6th, 7th, 8th and 26th; Fort Madison, Iowa, N., 1st, 2nd and 6th; Muscatine, Iowa, 2nd; Boonsboro, Iowa, SW., 5th, N., 17th; Nora Springs, Iowa, S., 10th; Rockford, Iowa, N., 10th and 15th; Davenport, S., 20th; Monticello, Iowa, NW., 21st, N., 22nd; Vail, Iowa, S., 22nd, N., 25th; Council Grove, Kan., N., 2nd; Creswell, Kan., N., 5th; Bellefontaine and Carthagena, Ohio, N., 4th; Elushing, N. Y., N., 5th; Starkey, N. Y., 28th; Fort Macon, N. C., S., 7th, 10th, 15th, and N., 18th; Galveston, N., 8th; Melissa, Texas, W., 10th; Bloomfield, Wis., N., 10th; Accotink, Va., N., 21st; Fall River, Mass., N., 2nd; Jackson, Tenn., N., 23rd and 28th; Santa Fe, N. M., N., 23rd; Fort Gibson, N., 24th; Breckenridge, N., 26th. *Wild Ducks*, at Milford, Ind., 1st; Louisville, Ill., N., 2nd; Decatur, Ill., N., 8th; Dodge City, 4th; Golden, Col., N., 6th; Vail and Monticello, Iowa, N., 7th; Rockford, Iowa, N., 15th; Guttenburg, Iowa, 23rd; Bloomfield, Wis., N., 10th; Emerson, Neb., N., 14th; Carthagena, Ohio, N., 14th; Corsicana, N., 17th; Plattsmouth, Neb., N., 24th and 26th; Creswell, Kan., W., 19th. *Robins*, Oregon, Mo., 1st; Bethel and Bellefontaine, Ohio, 2nd; Vevay, Ind., Plattsmouth, Neb., and Melissa, Texas, 3rd; Brownsville, Penn., and Salem, W. Va., 4th; Ringgold, Ohio, 1st; Merom, Ind., 12th; Jacksonburg, Ohio, 19th; Tabor, Iowa, 20th; Owing's Mills, Md., and New London, Conn., 22nd; Baxter Springs, Kan., and Urbana, O., 24th; Accotink, Va., 25th; Havana, Ill., and Bridgetown, Va., 26th; New Bedford, Mass., 28th. *Phebe birds*, Waltham, Mass., 2nd; Somerset, Mass., 4th. *Bluejays*, Monticello, Iowa, 5th; Jackson, Tenn., 12th. *Killdeer*, Melissa, Tex., 12th; Ft. Madison, Iowa, 25th; Baxter Springs, Kan., 18th. *Sparrows*, Monticello, Iowa, 6th; Embarrass, Wis., 16th; Waupaca, Wis., 26th. *Meadow Larks*, Kenton, Ohio, 12th. *Mocking birds*, Macon, Ga., 6th; Melissa, Tex., 12th. *Red birds*, Jackson, Tenn., 6th; Louisville, Ill., 10th; Melissa, Tex., 12th; Urbana, Ohio, 17th. *Blackbirds*, Louisville, Ill., 10th; Sedgewick, Kan., 26th. *Woodpeckers*, Decatur, Ill., 8th; Louisville, Ill., 10th. *Blue birds*, Ft. Madison, Iowa, 1st; Bethel, Ohio, 2nd; Plattsmouth, Neb., and Melissa, Tex., 3rd; Fall River, Mass., and Brownsville, Pa., 4th; West Chester, Pa., 5th and 10th; Decatur, Ill., 7th; Macon, Ga., 9th; Louisville, Ill., 10th; Vevay, Ind., Muscatine, Iowa,

and Northport, Mich., 11th; Wappinger's Falls, N. Y., 12th; Havana, Ill., 13th; Adrian, Mich., and Jacksonsburg, Ohio, 18th; New Bedford and Mendon, Mass., Oregon, Pa., New London, Conn., and Milford, Ind., 23d; Acetank, Va., 27th; Detroit, 28th. (2) *Insects*.—*Grasshoppers*, at Vail, Iowa, eggs turned up in plowing, sound and healthy. Tabor, Iowa, ground filled with eggs. Barlingame, Kan., some hoppers hatched out. Breckenridge, Minn., hatching out 8th. Davenport, Iowa, reported hatching out in western part of State, 8th. Kansas City, Mo., 9th., in southern Kansas the warm weather of past ten days has hatched out millions of grasshoppers. Des Moines, Iowa, 7th, the present warm weather has brought millions of grasshoppers to the surface. Plattsmouth, Neb., hatching out in favorable exposures 6th; on the 17th the ground from the surface to a depth of one or two inches was literally full of them. (3) *Frogs* heard at Howard, Neb., 18th. Cleaveland, Tenn., 4th. At Okahumpka, Fla., on the 28th, the ground was covered with small toads.

Botanical.—(1) *Trees*.—*Peach trees*, in bloom at Mican, Ga., 20th; New Orleans, 10th; Welborn, Fla., 16th; Aiken, S. C., 20th. *Orange trees* budding at Welborn, Fla., 17th. *Plum trees*, in bloom at New Orleans, 13th; Welborn, Fla., 12th; Aiken, S. C., 12th. *Apricot trees*, in bloom at Lynchburg, Va., 28th. (2) *Vegetables*.—Cloverdale, Cal., vegetables plenty; Weldon, Fla., 24th, early corn up, garden peas plenty.

Meteors.—1st, Benettsville, Ky., Corning and Oregon, Mo., Waterburgh, N. Y. 2nd, Fall River, Mass., Corning, Mo., Jacksonsburg, Ohio. 3rd, Monticello, Iowa, Woodstock, Md., Emerson, Neb. 5th, Vevay, Ind. 8th, Corning, Mo., Westerville and Carthagena, Ohio. 9th, Corning, Mo., Cincinnati, Ohio, Ephrata, Pa. 17th, Contoocookville, N. H., Tybee Island, Ga. 18th, West Charlotte, Vt. 20th, Smithville, N. C. 21st, Westboro and Waltham, Mass., Trenton, N. J., New London and New Haven, Conn. 22nd, Waterburgh, N. Y. 23rd, New Ulm, Tex. 26th, Flushing, N. Y. 28th, Daytona, Fla., Trenton, N. J.

Earthquakes.—A light shock was felt at Portland, Me., at 2:30 p. m. of the 18th; a heavy shock at Quincy, Plumas, Co., Cal., 17th.

A shower of stones is reported to have fallen on the 16th in Social Circle, Walton county, Georgia, varying in size from a hen's egg to that of a man's two fists, irregular in shape, dark grayish color, interspersed with a bright, shiny substance resembling mica. The shower was brief, extended over about four acres of ground and followed an explosive sound.

Polar Bands.—Ga., Tybee Island, 8th. Iowa, Guttenberg, 1st, 7th, 8th and 12th; Tabor, 28th. Ky. Benettsville, 6th and 27th. Me., Gardiner, 15th, 27th and 28th. N. H., Contoocookville, 5th. Ohio, Carthagena, 1st, 7th, 11th, 13th, 14th and 20th; Cincinnati, 19th. Va., Wytheville, 3rd, 6th, 7th, 12th, 13th, 20th and 26th. Minn., Duluth, 25th. Wis., Milwaukee, 20th. Miss., Vicksburg, 28th.

Prairie and Forest Fires.—At Dodge City, Kan., 2d; Oregon, Mo., 3rd; Wytheville, Va., 11th; Salem, West Va., 12th, 15th and 21st; Monticello, Iowa, 17th.

Zodiacal Light.—Ark., Monticello, 11th, 16th and 18th. Ill., Carbondale, 9th. Iowa, Monticello, 2nd, 3rd, and 8th to 15th; Iowa City, frequently, especially 2nd, 10th and 13th. Kan., Ellinwood, 2nd, 3rd and 4th. Md., Emmittsburg, 10th; Sandy Springs, first noticed 5th, and continued for two weeks. Mass., Somerset, 4th, 6th, 8th, 10th, 11th, 13th and 14th; Westboro, 9th, 10th and 11th; Cambridge, 6th, 8th, 9th, 11th, 15th and 16th. Mich., Adrian, 3rd, 7th, 8th, 10th, 12th, 13th and 28th. Mo., Corning, 1st, 2nd, 3rd, 10th and 12th; Oregon, 1st, 3rd, 6th, 9th, 10th, 11th, 12th and 17th. Neb., Clear Creek, 1st, 3rd, 5th, 6th, 8th, 9th and 10th. N. H., Contoocookville, 14th. N. J., Trenton, 7th and 14th; Freehold, 6th, 9th, 11th and 13th; Ateo, 7th, 8th, 9th, 10th, 11th, 13th and 14th. N. Y., Waterburgh, 4th, 5th, 6th, 8th, 9th and 14th; Malone, 14th. Ohio, Bellfontaine, 2nd, 3rd, 6th, 7th, 8th, 9th to 14th and 16th; Urbana, 2nd, 4th, 9th, 12th, 14th and 15th; Carthagena, 4th, 6th, 7th, 8th, 9th, 10th and 12th. Va., Wytheville, 1st, 10th, 12th, 15th and 28th.

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